Term Information

Effective Term	Spring 2017

General Information

Course Bulletin Listing/Subject Area	Psychology
Fiscal Unit/Academic Org	Psychology - D0766
College/Academic Group	Arts and Sciences
Level/Career	Graduate, Undergraduate
Course Number/Catalog	5870
Course Title	Neuroeconomics and Decision Neuroscience
Transcript Abbreviation	Neuroecon&Decision
Course Description	In this course, we will focus on the psychology and neuroscience underlying economic behavior. Discussion will cover various domains of economic decision making and what Neuroeconomics has taught us about them.
Semester Credit Hours/Units	Fixed: 3

Offering Information

Length Of Course	14 Week, 12 Week, 7 Week
Flexibly Scheduled Course	Never
Does any section of this course have a distance education component?	No
Grading Basis	Letter Grade
Repeatable	No
Course Components	Lecture
Grade Roster Component	Lecture
Credit Available by Exam	No
Admission Condition Course	No
Off Campus	Never
Campus of Offering	Columbus

Prerequisites and Exclusions

Prerequisites/Corequisites	AEDE 2005, Stats 1450, Stats 2450, Psych 2220 OR Econ 3400 AND Math 1148 or higher AND Econ 4001.01, Econ 4001.02, Econ 4001.03, AEDE 4001, Psych 3313, Psych 3513 or Psych 4508.
Exclusions	Not open to students with credit for Econ 5870

Cross-Listings

Cross-Listings	Cross-listed in Economics

Subject/CIP Code

Subject/CIP Code	42.0101
Subsidy Level	Doctoral Course
Intended Rank	Junior, Senior, Masters, Doctoral

Requirement/Elective Designation

The course is an elective (for this or other units) or is a service course for other units

Course Details

Course goals or learning objectives/outcomes

- Students will understand the basics of how the brain works, how these neural functions produce choice behavior, and the relationship between economic models and cognitive models.

Content Topic List

- Choice behavior
- Economic models
- Cognitive models
- Time discounting
- Social distribution

Attachments

- Concurrence Econ 5870 IntlStds.pdf: Concurrence

  (Concurrence. Owner: Paulsen,Alisa Marie)
- Concurrence Econ 5870 PubHlth.pdf: Concurrence

  (Concurrence. Owner: Paulsen,Alisa Marie)
- Concurrence_Form_ECON5870 AEDE.pdf: Concurrence

  (Concurrence. Owner: Paulsen,Alisa Marie)
- Econ 5870 Concurrence_Form JGCPA.pdf: Concurrence

  (Concurrence. Owner: Paulsen,Alisa Marie)
- Econ-Psych 5870.doc: Syllabus

  (Syllabus. Owner: Paulsen,Alisa Marie)
- Psychology Major Learning Objectives July 2016.docx: Updated Curriculum Map

  (Other Supporting Documentation. Owner: Paulsen,Alisa Marie)

Comments

Workflow Information

Status	User(s)	Date/Time	Step
Submitted	Paulsen,Alisa Marie	07/22/2016 02:20 PM	Submitted for Approval
Approved	Givens,Bennet Stuart	07/22/2016 03:10 PM	Unit Approval
Approved	Haddad,Deborah Moore	07/22/2016 03:31 PM	College Approval
Pending Approval	Nolen,Dawn Vankeerbergen,Bernadette Chantal Hanlin,Deborah Kay Jenkins,Mary Ellen Bigler Hogle,Danielle Nicole	07/22/2016 03:31 PM	ASCCAO Approval

Neuroeconomics and Decision Neuroscience (Econ/Psych 5870)

Spring 2017

Syllabus

Instructor: Ian Krajbich
Office: Arps Hall, room 415 or Lazenby Hall, room 200E
E-mail: krajbich.1@osu.edu
Phone: 614-688-2136
Mailbox: Arps Hall, room 410 or outside of Lazenby 214
Office hours: By appointment

Teaching Assistants:
Office:
E-mail:
Mailbox:
Office hours:

Faculty Assistant:
Office:
Email:
Phone:

Class meetings: Tuesday and Thursday, 80 minutes
Arps Hall, Room XXX

Format of instruction: Lectures with 3 hours of contact per week

Course description

In this course, we will focus on the psychology and neuroscience underlying economic behavior. We will start with a brief "crash course" in neuroscience basics, then go on to cover various domains of economic decision making and what Neuroeconomics has taught us about them. Topics will include decisions about risk, time discounting, social distribution, strategy in games, and learning. By the end of the course, students should understand the basics of how the brain works, how these neural functions produce choice behavior, and the relationship between classic economic models and models of how the brain works.

Prerequisites

This course is designed for undergraduates with some exposure to economic theory, decision making, or neuroscience. Prerequisites include: (AEDE 2005 or Stats 1450 or Stats 2450 or Psych 2220 or Econ 3400) AND (Math 1148 or higher) AND (AEDE 4001 or Econ 4001 or Psych 4508 or Psych 3313 or Psych 3513).

Required Textbook and Readings

- Glimcher, P.W., Fehr, E. (2014). *Neuroeconomics: Decision Making and the Brain* (2nd ed.). Academic Press.

- Additional reading materials will be posted to Carmen as PDF files on a regular basis.
- Exams **will** contain questions from the readings, even if that material is not explicitly covered in class.

Grading Policies

The Big Picture

- Grades will be determined on the basis of the following components:

Exam 1	25% (could be 20%, 25%, or 30%; see below)
Exam 2	25% (could be 20%, 25%, or 30%; see below)
Exam 3	25% (could be 20%, 25%, or 30%; see below)
Problem sets	20%
In-class pop quizzes	8% (5% + up to 3% bonus; see below)

- Grades for all components of the course will be converted to percentages and averaged using the weights given above. Your final grade will be computed using the scale below.

E	D	D+	C–	C	C+	B–	B	B+	A–	A
<60%	≥60%	≥67%	≥70%	≥73%	≥77%	≥80%	≥83%	≥87%	≥90%	≥93%

Exams

- Exams will be in class, closed book, and closed notes. Questions will probably be a mix of multiple-choice, short-answer, and discussion. Some calculations will be required, so bring a calculator (but not a cell phone or a laptop).
- In problems that require calculations, you must show your work and/or clearly explain what you did to get your answer. Just writing down your final answer is insufficient, even if your answer is correct. (This rule does not apply to multiple choice questions.)
- The second and third exams will focus on material covered in the relevant parts of the course, so they will not be a "cumulative" by design. However, they will be at least somewhat cumulative by necessity (i.e., you shouldn't forget earlier material).
- I am happy to consider written requests for re-grades, if those requests are received within one week of my returning the graded exam. I will re-grade only that portion of the exam specified in the written request. It is possible for re-grading to lead to a lower grade rather than a higher grade.
- Your best exam grade (in percentage terms) will be weighted 30% and your worst exam grade will be weighted 20%. The other exam will be weighted 25%. These weights will be determined separately for each student at the end of the semester. The total is 75% no matter how you slice it. This policy is intended to take a bit of the sting out of one poor performance, but it won't do much for a string of low scores.

Homework Assignments

- There will be about six written problem sets during the course. These are intended as practice and will often involve calculations. They will usually be handed out during one class period and be due at the beginning of class 5 or 7 days later. Occasionally, a problem set may include some material that is covered only 2 days before the due date.
- Collaboration on problem sets is encouraged.

- Problem sets will be graded on a 0–2 "good effort" scale, where 0 = missing, 1 = handed in but unsatisfactory, and 2 = satisfactory. If you don't make a serious effort, you can expect a grade lower than 2.
- Your lowest grade on these problem sets will be dropped, but late problem sets will not be accepted. If you miss a problem set for a legitimate reason, just count that one as your drop grade.

In-Class Pop Quizzes

- There will be several in-class pop quizzes during the semester. I don't know the exact number, but an average of one every two or three lectures would be a good guess. The final number of quizzes may be higher or lower than the number of quizzes currently listed on Carmen.
- Quizzes will not be announced ahead of time. If you ask me if I'm planning to give a quiz on a particular day, I will not tell you.
- Quizzes may be given at any time during the lecture (beginning, middle, or end). They may cover material from that day, material from the previous lecture, or both.
- You must be present to take the quiz. There are no make-ups.
- The quizzes are intended to be straightforward, but not trivial. If you are present and paying attention you should get most of the answers correct.
- The quizzes will count as 8% of your grade. The first 5% is like any other component of your grade. Anything more than that is bonus. So in principle, you can get 103% in the course. But if you miss all of the quizzes, the best you can do is 95%.
- Among other things, the bonus is intended to make the "no make-ups" policy reasonable. If you miss one or two quizzes, even for legitimate reasons, don't worry about it.
- If you are philosophically opposed to pop quizzes and want no part of this nonsense, send me an email before the start of class on the date of Exam 1 saying that you do not want the pop quizzes to be part of your grade. If you send me such an email, I will compute your grade on the basis of the other 95% of the course and scale your grade up from 95% to 100% by dividing your average by 0.95 (really, it works). If you opt out of the pop quizzes, then none of them will count and you will not be eligible for the 3% extra credit. The decision to opt out of the quizzes is irreversible (i.e., you can't opt back in later).

Exceptions Due to Legitimate Illness, Injury, or Serious Emergency

Students missing an exam or other deadline because of legitimate illness, injury, or serious emergency must do both of the following things:

1. Contact me in person or by email **before** the exam or deadline.
2. Provide written documentation of your illness, injury, or emergency from an authoritative source (e.g., a physician's note, a police report, a funeral announcement).

Remedial actions (if any) are at my discretion. Make-up exams and deadline extensions are not guaranteed, even if both of the above actions are taken. Make-up exams typically involve different questions and problems than those on the original exam.

Sleeping through an exam is not considered a legitimate excuse.

No make-ups will be offered for missed pop quizzes (the bonus is intended to provide a bit of a cushion in such cases). You do not need to contact me to say that you will be missing a quiz if there is one. My standard response to your missing a homework assignment will be that you can count that one as your drop grade.

Academic Misconduct

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct http://studentlife.osu.edu/csc/.

Students with Disabilities

Students with disabilities that have been certified by the Office for Disability Services will be appropriately accommodated, and should inform the instructor as soon as possible of their needs. The Office for Disability Services is located in 150 Pomerene Hall, 1760 Neil Avenue; telephone 292-3307, TDD 292-0901; http://www.ods.ohio-state.edu/. To ensure fairness to all students, requests for special accommodations will not be granted in the absence of ODS certification.

Tentative Course Outline

Note: This schedule is subject to change.

Week	Date	Topic and Event	Reading
1	Aug 28	Overview of Course	
2	Sep 2	Normative economics	G&F 1
	Sep 4	Experimental economics	G&F 2
3	Sep 9	Computational models	G&F 3
	Sep 11	Testing computational models	G&F 4
4	Sep 16	Introduction to neurosciecnce	G&F 5
	Sep 18	Methods from cognitive neuroscience	G&F 6
5	Sep 23	Evolutionary insights	G&F 7
	Sep 25	Simple choice	G&F 8
6	Sep 30	*Exam 1*	
	Oct 2	Risk & Uncertainty	G&F 9
7	Oct 7	Prospect theory	G&F Appendix
	Oct 9	Intertemporal choice and self-control	G&F 10
8	Oct 14	Social preferences	G&F 11
	Oct 16	Social preferences (continued)	
9	Oct 21	Multi-stage valuation	G&F 13
	Oct 23	Pharmacology and decision making	G&F 14
10	Oct 28	Reinforcement learning	G&F 15
	Oct 30	Model-based vs. model-free learning	G&F 21
11	Nov 4	*Exam 2*	
	Nov 6	Experienced vs. decision utility	G&F 18
12	Nov 11	***Veteran's Day***	
	Nov 13	Models of perception	G&F 19
13	Nov 18	Applications of perception to economics	G&F 20
	Nov 20	Integrating benefits & costs	G&F 22
14	Nov 25	Context-dependence	G&F 24
	Nov 27	***Thanksgiving***	
15	Dec 2	Strategic choice & game theory	G&F 25
	Dec 4	Strategic choice in primates	G&F 26
16	Dec 9	Theory of mind	G&F 27
Finals	Dec 15	*Exam 3* Oneday, XX:XX-YY:YY	

Psychology Major Learning Objectives

Program Objectives

Knowledge Base in Psychology

K1. Describe key concepts, principles, & overarching themes in psychology

K2. Develop working knowledge of psychology's content domains

K3. Describe applications of psychology

Scientific Inquiry & Critical Thinking

S1. Use scientific reasoning ti interpret psychological phenomena

S2. Demonstrate psychology information literacy

S3. Engage in innovative & integrative thinking & problem solving

S4. Interpret, design, & conduct basic psychological research

S5. Incorporate sociocultural factors in scientific inquiry

Ethical & Social Responsibility in a Diverse World

E1. Apply ethical standards to evaluate psychological science & practice

E2. Build & enhance personal relationships

E3. Adopt values that build community at local, national, & global levels

Communication

C1. Demonstrate effective writing for different purposes

C2. Exhibit effective presentation skills for different purposes

C3. interact effectively with others

Professional Development

P1. Apply psychological content & skills to career goals

P2. Exhibit self-efficacy & self-regulation

P3. Refine project-management skills

P4. Enhance teamwork capacity

P5. Develop meaningful professional direction for life after graduation

Learning Goal Levels

F – Foundational

A- Advanced

I. Data Analysis and Research Requirement																			
Course	**Area**	**K1**	**K2**	**K3**	**S1**	**S2**	**S3**	**S4**	**S5**	**E1**	**E2**	**E3**	**C1**	**C2**	**C3**	**P1**	**P2**	**P3**	**P4**	**P5**
2220(H) Data Analysis		F			F	F	F	F					F			F	F	F		
2300 Research Methods		F	F	F	F	F	F	F	F	F	F		F		F	F	F	F		

II. Core Requirements (1 from each area)																				
A. Brain and Behavior																				
Course	**Area**	**K1**	**K2**	**K3**	**S1**	**S2**	**S3**	**S4**	**S5**	**E1**	**E2**	**E3**	**C1**	**C2**	**C3**	**P1**	**P2**	**P3**	**P4**	**P5**
3313 Intro to Behavioral Neuroscience	BN	F	F		F	F				F										
3313H Intro to Behavioral Neuroscienc	BN	F	F		F	F	F	F		F	F		F	F	F				F	
3513 Intro to Cognitive Neuroscience	CO	F			F	A		F		F			F							
B. Cognitive Psychology																				
3302 Perception & Language	CO	A	A	A	A	A	F		F											
3310 Sensation & Perception	CO	A	A	F	A	F	F									F				F
3312 Memory & Cognition	CO	A	A	F	A	A	F	F	F	F			F	F	F					F
C. Clinical and Developmental Psychology																				
2367.02 Abnormal Psychology Analysis	CL	F	F	F	F		F						F		F			F		
3331 Abnormal Psychology	CL	F	F	A	A			A	A											
3335 Psychology of Adjustment	CL	F																		
3340 Lifespan Development	D	F	F	F	F	F						F	F							
3530 Theories of Personality	CL	A	A	A	A	F	F	F	A	F	A		F				F			
3550 Psychology of Childhood	D	F	F	F	F	F						F	F							
3551 Psychology of Adolescence	D	F		F	F	F		F						F					F	

D. Social Psychology																				
2367.01 Social Psychology	S	F	F,A	F,A	F	F,A	F,A	F		F		F	F,A	F	F	F	F,A	F	F	
3325 Intro to Social Psychology	S	F	F,A	F,A	F	F,A	F	F		F		F				F				
3375 Stereotyping and Prejudice	S	F	F	F,A	F	F	F	F	F	F	F	F,A			F	F,A				

III. Advanced Requirements																				
Course	**Area**	**K1**	**K2**	**K3**	**S1**	**S2**	**S3**	**S4**	**S5**	**E1**	**E2**	**E3**	**C1**	**C2**	**C3**	**P1**	**P2**	**P3**	**P4**	**P5**
Sequenced Advanced Courses																				
4305 Intro to Psychopharmacology	BN	A	A	A	A	A	A	A	A											
4475 The Self	S	A	A	A	A		A		A		A	A			A	A				A
4501 Advanced Behavioral Neuroscience	BN	A	A	A	A	A	A	A												
4510 Cognitive Psychology Laboratory	CO	A	A	A	A	A	A	A		A			A	A	F	F				
4518 Attitudes	S	F,A	F,A	F	F,A	F,A	F	F	F		F	F				F	F	F		
4520 Social Psychology Laboratory	S	A		F,A	F,A	F,A	A	F,A	F,A	F,A		A	A	A		F,A	F,A	A	A	A
4532 Clinical Psychology Science	CL	A	A	A	A		A	A		F,A						A				A
4540 Counseling Psychology	CL	F,A	F,A	F	F	F	F		F	F	F,A	F			F	F				
4630 Attitudes and Persuasion	S	F,A	F,A	F,A	F,A	F	F	F,A	F			F	F,A		F	F	F	F		
4644 Hormones and Behavior	BN	A	A	A	A	A	A	A												
5600 Psychobio. of Learning and Memory	BN	A	A	A	A	A			A	A	A									
5602 Behavioral Genetics	BN	A	A	A	A	F	F	A	A											
5606 High Level Vision	CO	A	A	F	A	F	A	A					A	A	F					
5614 Cognitive Neuroscience	CO	A	F	F	A	A	F	A	F	F			F	A	A			A	A	
5622 Development of Brain	BN	A	A	A	A	A	A	A	A					A	A					

and Behavior																				
5681 Development and Psychopathology	CL	A		A	A			F												
5684 Psychology of Delinquency	D	A	A	A	A	A	A	F	A	A	F	A	A	F	A	A	A	F	F	A
Advanced Courses																				
4309 Human Motor Control	CO	A	A	A	A	A	F	F					F			F				
4485 Psychology and the Law		F,A	F,A	F,A	F, A	F	F	F	F	F	F	F,A	F,A			F,A				
4505 History of Psychology		A	F,A	A	F	A			A	F										
4508(H) Judgment and Decision-Making	Q	F	F	A	F		F	F	F											
4511 Psychological Testing		F	F	F	A	F		A		F			F	F		F				
4515 Psychology of Emotion	S	A,F	A,F	A,F	A,F	A,F		A,F	A,F	F	F					F			F	
4521 Personnel Psychology		F,A		F,A	F,A	F,A	F, A	F,A	F, A	F	F,A	F,A	F,A	F,A	F,A	F,A	F	F,A	F	F,A
4522 Organizational Psychology		A,F	A,F	A,F	F	F	A,F	F	F	F,A			F	F	F	F,A	F	F		F
4531 Health Psychology	CL	A	A	A	A	F	F			A	F		F		F	F	F	F	F	A
4543 Psychology of Gender	CL	A	F	A	A	A	F	F	A		A	F	F	F	A	F	A	F	F	F
4545 Cross-Cultural Psychology	CL	F,A	F,A	A	A	F	F	F	F	F	F,A	F,A	F	F	F	F			F	
4552 Psychology of Adult Years	D	F		F	F	F														
4554 Language Development	D		A		A	A	A	F					A	A						
4555 Adolescent Sexuality	D	F		F	F	F		F					F	F					F	
4571 Psychology of Dev. Disabilities	I	F		F	F	F, A						F	F, A					F		
5601 Comparative Psychology		A	A		A	A														
5608 Introduction to Mathematical Models	Q	F			A			A										F		
5610 Emotion Regulation	CL	A	A	A	A	A	A	F	F	F			A		A	A				

5613H Biological Psychiatry	BN	A	A	A	A	A	A													
5615 Psychology of Language	CO				F	F	F	F	F	F			F							
5618 Computational Cog. Neuroscience	CO	A	A	A	F	F	F						F	A	F	F				
5621 Intro to Event-Related Potentials	CO	A	A	A	A	F	A	A		F	F	F	F	A	F	F			A	
5832 Lifespan Sociomoral Development	D	A	F		F	A							A							
5898 Seminar in Behavioral Neuroscience	BN	A	A	A	A	A	A	A	A					A	A					

IV. Elective Courses

Course	Area	K1	K2	K3	S1	S2	S3	S4	S5	E1	E2	E3	C1	C2	C3	P1	P2	P3	P4	P5
2301 Psychology of Extraordinary Beliefs	Q	F			A				F	F										
2303 Positive Psychology	CL	F		F	F	F	F	F		F	A	A	F		F	F	F			
2311 Psychology of Motivation	CO	A	A	F	F	F	F								F	F	F			
2333 Psychology of Human Sexuality	CL	A	F	F	F	F			F	F	A	A			F	F	F			
2350 Contemp. Developmental Psychology	D	F		F	F		F					F								
2376 Interpersonal Relationships	S	F,A		F,A	F	F		F	F		F				F	F		F	F	
2420 Psychology Applied to Sport		F		F,A	F,A	F			F	F	F				F	F			F	
2462 Psychology of Creativity							F,A				F	F		F	F	F,A				
3320 Psychological Science of Addiction		F	F	F			F													
3321(H) Quant. and Statistical Methods		F			A	F	F	F	F											
3371 Language and the Mind	CO	A	F		A	F		F	F		F		F	A	A	A	F	F	F	
3624 Primate Cognition		F	F		F	F				F										
4525 Psychology of Personal Security	S	A		F,A	F,A	F	F,A		F	F,A	F	F, A	F,A		F	F	F	F		
5425 Introduction to fMRI	CO	A		F,A	F,A	F	F,A			F,A	F	F,A	F,A		F	F	F	F		
5612 Introduction to Cognitive Science	CO	A	A		F	F	F						F							
5620 Technology, Efficiency, and Happiness	CO	A	F	A	F	F	F	F				F	F	A		F				
5870 Neuroeconomics and Decision Neuroscience	D	F	F	A	A		F	F	F											
5891 Proseminar in Cognitive Science	CO	A	A	A	A	A	A	A		A			A	A	F					
Experiential Elective Courses																				
3191 Internship in Psychology		F		F		F					A	F, A	F		A	F, A	F,		A	F,

																	A			A
3193.01 Individual Studies in Psychology		A				A														
3193.02 Individual Studies: Teaching		A	F,A	F,A	F,A	A	A	F	F	F	A	F, A	A	A	A	F, A	F	F, A	A	A
4998 Undergraduate Research		A			F,A	A	F, A	F,A		F,A					A					
4999.01(H) Thesis Research I			A		A	A	A	A		A	A		A	A		A	A	A		A
4999.02(H) Thesis Research II			A		A	A	A	A		A	A		A	A		A	A	A		A
5700 Science Education Outreach	D		A	A	A	A		A	A			A		A	A	A	A		A	